

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

<b>CONVOLVE, INC.,</b>	§	
	§	
<b>Plaintiff,</b>	§	
	§	
<b>v.</b>	§	
	§	<b>Civil Action No. 2:08-cv-244</b>
<b>DELL INC.,</b>	§	
<b>WESTERN DIGITAL CORPORATION,</b>	§	<b>JURY TRIAL DEMANDED</b>
<b>HITACHI GLOBAL STORAGE</b>	§	
<b>TECHNOLOGIES, INC., and</b>	§	
<b>HITACHI LTD.,</b>	§	
	§	
<b>Defendants.</b>	§	

**COMPLAINT**

Plaintiff Convolve, Inc., for its Complaint against Defendants, hereby alleges as follows:

**Nature of the Action**

1. This is an action for patent infringement arising under the patent laws of the United States, Title 35, United States Code.

**The Parties**

2. Plaintiff Convolve, Inc. ("Convolve") is a corporation organized and existing under the laws of New York with its principal place of business at 145 Bedford Rd., Armonk, New York. Convolve is a private engineering company that specializes in generating optimized trajectories to improve the performance of a wide range of devices, including motion control systems and computer hard disk drives.

3. Upon information and belief, Defendant Dell Inc. (“Dell”) is a corporation organized and existing under the laws of Delaware with its principal place of business at One Dell Way, Round Rock, Texas, 78682. Dell offers a wide range of product categories, including desktop computer systems, storage, servers and networking products, mobility products, software and peripherals, and enhanced services. Dell is currently the number one supplier of personal computer systems in the United States.

4. Upon information and belief, Defendant Western Digital Corp. (“Western Digital”) is a corporation organized and existing under the laws of Delaware with its principal place of business at 20511 Lake Forest Drive, Lake Forest, California 92630. Western Digital develops, manufactures and sells hard drives worldwide to original equipment manufacturers (“OEMs”) such as Dell, original design manufacturers (“ODMs”) for use in personal computer systems and subsystems, as well as to distributors and retailers. Western Digital’s hard drives are used in desktop computers, notebook computers and enterprise applications. According to Western Digital's 2007 Form 10-K, filed with the United States Securities and Exchange Commission on August 24, 2007, Western Digital’s sales to OEMs “accounted for 48%, 54% and 58% of [its] revenue in 2007, 2006 and 2005, respectively.” Further, during 2007, Western Digital’s largest OEM customer was Dell. During 2007, 2006 and 2005, sales to Dell accounted for 10%, 12%, and 16%, respectively, of Western Digital’s revenue.

5. Upon information and belief, Hitachi Global Storage Technologies, Inc. (“Hitachi Global Storage Technologies”) is a Delaware corporation with its principal place of business at 3403 Yerba Buena Road, San Jose, California 95135. In 2003, Hitachi Global Storage Technologies was formed as a result of a merger between IBM and Hitachi, Ltd.’s storage

technology businesses. Hitachi Global Storages Technologies is in the business of marketing and selling hard disk drive storage devices.

6. Upon information and belief, Hitachi, Ltd. is a corporation organized and existing under the laws of Japan with its principal place of business at 6-6, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-8280, Japan. Hitachi, Ltd. is involved in business activities in seven main areas: Information & Telecommunication Systems, Electronic Devices, Power & Industrial Systems, Digital Media and Consumer Products, High Functional Materials and Components, Logistics, Services & Others, and Financial Services. Hitachi, Ltd. offers for sale a variety of products, including hard disk drives and personal computers. Hitachi Global Storages Technologies and Hitachi, Ltd. will hereinafter be referred to collectively as “Hitachi.”

#### **Jurisdiction and Venue**

7. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

8. Personal jurisdiction over Defendants is consistent with the United States Constitution and § 17.04 of the Texas Civil Practice and Remedies Code because Defendants have committed and continue to commit acts of direct and indirect patent infringement in this district as alleged in this Complaint.

9. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b) and (c) and 1400(b).

#### **Background to the Action** **United States Patent No. 4,916,635**

10. Convolv hereby restates, realleges, and incorporates by reference those allegations set forth in the foregoing paragraphs.

11. On September 12, 1988, a patent application was filed before the United States Patent and Trademark Office (“PTO”), and on April 10, 1990, the PTO duly and legally issued United States Patent No. 4,916,635 (the “‘635 Patent”), entitled “Shaping Command Inputs To Minimize Unwanted Dynamics.” The named co-inventors of the ‘635 Patent are Neil Singer, Ph.D. (“Singer”), Ken Pasch, Ph.D. (“Pasch”), and Warren Seering, Ph.D. (“Seering”), who began and completed their work on the invention during their tenure at the Massachusetts Institute of Technology (“MIT”). MIT is the sole assignee of the ‘635 Patent. The invention described in the ‘635 Patent addresses the problem of controlling machines exhibiting unwanted dynamics, such as vibrations. Utilization of the technology disclosed in the ‘635 Patent permits a machine to move an object quickly and with minimal vibration. A copy of the ‘635 Patent is attached hereto as Exhibit “A.”

12. Convoke, a private engineering company, was founded in 1989 by Singer. Convoke is MIT’s exclusive licensee under the ‘635 Patent and has the right to enforce the ‘635 Patent in its own name against third parties.

13. The technology disclosed in the ‘635 Patent has applications in many industries, including, but not limited to, the manufacture of hard drives and computers. The technology has particular utility within the hard drive industry, which has long sought to remedy the problems associated with vibration of the drive’s actuator arm. The technology disclosed in the ‘635 Patent has already been incorporated into a variety of specialty applications, including the NASA Space Shuttle robot arm training system, X-ray inspection machines, flat panel inspection machines and cranes handling nuclear materials.

14. Convolve has the right under 35 U.S.C. § 154(a)(1) to exclude others from making, using, offering for sale, or selling the invention disclosed in the ‘635 Patent, including the right to bring this action for damages and injunctive relief.

**United States Patent No. 6,314,473**

15. On March 5, 1998, Convolve filed an original provisional patent application (“the March 1998 Application”) covering the technology that would later issue as United States Patent No. 6,314,473 (“‘473 Patent”). A copy of the March 1998 Application is attached hereto as Exhibit “B.” In November 1998, Convolve filed a second provisional patent application (“the November 1998 Application”) covering additional technology features that would also issue as the ‘473 Patent. A copy of the November 1998 Application is attached hereto as Exhibit “C.”

16. The ‘473 Patent was duly and legally issued by the United States PTO on November 6, 2001. The ‘473 Patent identified Singer, Pasch, and Mark Tanquary (“Tanquary”) as the named co-inventors of the patent, and named Convolve as the sole assignee. A copy of the ‘473 Patent is attached hereto as Exhibit “D.”

17. Convolve has the exclusive right under 35 U.S.C. § 154(a)(1) to exclude others from making, using, offering for sale, or selling the invention disclosed in the ‘473 Patent, including the right to bring this action for injunctive relief and damages.

**Communications between Convolve and Dell Regarding the Technologies Disclosed in the ‘635 and ‘473 Patents**

18. Upon information and belief, in early 1998, Singer contacted a representative of Dell regarding the possibility of Dell entering into a licensing agreement with Convolve relating to the technology disclosed in the ‘635 Patent.

19. Upon information and belief, following Singer’s initial contact with Dell, representatives of Convolve and Dell discussed the potential value of the technology disclosed in

the '635 Patent, and Convolve presented Dell with simulations and hardware demonstrations of the technology disclosed in the '635 Patent.

20. Upon information and belief, Convolve and Dell had several further communications over the next year, wherein Convolve disclosed its confidential and proprietary information, including its patent applications for the '473 Patent, under the cover of non-disclosure agreements.

21. Despite the fact that many other entities have done so, Dell has never entered into a licensing agreement with Convolve regarding the technologies disclosed in the '635 and '473 Patents.

**Acts Giving Rise to the Action**

22. Defendant Dell has been and is engaged in the making, using, selling, offering for sale, and/or distribution of personal computers throughout the United States, including in this judicial district.

23. Upon information and belief, Defendant Western Digital has been and is engaged in the making, using, selling, offering for sale, and/or distribution of hard disk drives throughout the United States, including in this judicial district.

24. Upon information and belief, Defendant Hitachi has been and is engaged in the making, using, selling, offering for sale, and/or distribution of hard disk drives throughout the United States, including in this judicial district.

**COUNT 1**  
**INFRINGEMENT OF U.S. PATENT NO. 4,916,635**  
**BY DEFENDANT WESTERN DIGITAL**

25. Convolve hereby restates, realleges, and incorporates by reference those allegations set forth in the foregoing paragraphs.

26. Upon information and belief, Defendant Western Digital has infringed one or more claims of the '635 Patent when it made, used, sold, offered for sale, and/or distributed hard disk drives in the United States. See, e.g., Ex. E, Abdullah Al Mamun, GuoXiao Guo & Chao Bi, Hard Disk Drive: Mechatronics and Control §2.6 (CRC Press 2007) (co-authored by Western Digital employee Guo, and citing to Singer, N.C. and Seering, W.P., Preshaping Command Input To Reduce System Vibration, Journal of Dynamic Systems, Measurement and Control, Vol. 112, No. 1, pp. 76-82, March 1990 (attached as Ex. F) as describing the method for removing switching-induced vibration). Such hard disk drives made, used, sold, offered for sale, and/or distributed by Western Digital include, but are not limited to, the model known as Western Digital 400BB and all other similarly designed, manufactured and/or performing models of Western Digital hard disk drives that utilize comparable techniques for controlling unwanted dynamics, such as vibrations.

27. Upon information and belief, Defendant Western Digital is in possession of certain hard disk drive firmware source codes and engineering software utilities and documentation, not within the public domain, which will provide additional evidence of said infringement.

28. Defendant Western Digital's actions constitute infringement pursuant to 35 U.S.C. § 271.

29. Upon information and belief, the unlawful infringing activities by Defendant Western Digital are continuing and will continue unless enjoined by this Court.

30. As a result of the infringing acts herein described, Convolve has sustained damages and will continue to sustain damages in the future, including irreparable harm, unless Defendant Western Digital is enjoined from infringing said patent.

**COUNT 2**  
**INFRINGEMENT OF U.S. PATENT NO. 4,916,635**  
**BY DEFENDANT HITACHI**

31. Convolv hereby restates, realleges, and incorporates by reference those allegations set forth in the foregoing paragraphs.

32. Upon information and belief, Defendant Hitachi has infringed one or more claims of the '635 Patent when it made, used, sold, offered for sale, and/or distributed hard disk drives in the United States. Such hard disk drives made, used, sold, offered for sale, and/or distributed by Hitachi include, but are not limited to, the model known as Hitachi HDS722580VLAT20, and all other similarly designed, manufactured and/or performing models of Hitachi hard disk drives that utilize comparable techniques for controlling unwanted dynamics, such as vibrations.

33. Upon information and belief, Defendant Hitachi is in possession of certain hard disk drive firmware source codes and engineering software utilities and documentation, not within the public domain, which will provide additional evidence of said infringement.

34. Defendant Hitachi's actions constitute infringement pursuant to 35 U.S.C. § 271.

35. Upon information and belief, the unlawful infringing activities by Defendant Hitachi are continuing and will continue unless enjoined by this Court.

36. As a result of the infringing acts herein described, Convolv has sustained damages and will continue to sustain damages in the future, including irreparable harm, unless Defendant Hitachi is enjoined from infringing said patent.

**COUNT 3**  
**INFRINGEMENT OF U.S. PATENT NO. 6,314,473**  
**BY DEFENDANT DELL**

37. Convolv hereby restates, realleges, and incorporates by reference those allegations set forth in the foregoing paragraphs.



38. Upon information and belief, Defendant Dell has made, used, sold, offered for sale, and/or distributed in the United States personal computers incorporating utility software and/or hard disk drives that infringe one or more claims of the '473 Patent. Such personal computers include, but are not limited to, the models known as Dimension 2400, Dimension C521, Optiplex 740, and their respective families of personal computers.

39. In addition, all Dell personal computers with the same or similar structure, insofar as the structure is relevant to the '473 Patent, as the models known as Dimension 2400, Dimension C521, and Optiplex 740 infringe one or more claims of the '473 Patent. Upon information and belief, these products would include Dell's Dimension and Optiplex lines of personal computers.

40. Defendant Dell is in possession of certain computer source codes and engineering software utilities and documentation, not within the public domain, which will provide additional evidence of said infringement.

41. Defendants Dell's actions constitute infringement pursuant to 35 U.S.C. § 271.

42. Defendant Dell's infringement of the '473 Patent has been and continues to be willful.

43. Upon information and belief, the unlawful infringing activities by Defendant Dell are continuing and will continue unless enjoined by this Court.

44. As a result of the infringing acts herein described, Convolve has sustained damages and will continue to sustain damages in the future, including irreparable harm, unless Defendant Dell is enjoined from infringing said patent.

**COUNT 4**  
**INFRINGEMENT OF U.S. PATENT NO. 6,314,473**  
**BY DEFENDANT WESTERN DIGITAL**

45. Convolve hereby restates, realleges, and incorporates by reference those allegations set forth in the foregoing paragraphs.

46. Upon information and belief, Defendant Western Digital has made, used, sold, offered for sale, and/or distributed in the United States hard disk drives that infringe one or more claims of the '473 Patent. Such hard disk drives include at least the models known as Western Digital 800 JB, Western Digital 400BB, Western Digital 1600-887, Western Digital 2000-99, and all other similarly designed, manufactured and/or performing models of Western Digital hard disk drives.

47. Upon information and belief, Defendant Western Digital is in possession of certain hard disk drive firmware source codes and engineering software utilities and documentation, not within the public domain, which will provide additional evidence of said infringement.

48. Defendant Western Digital's actions constitute infringement pursuant to 35 U.S.C. § 271.

49. Upon information and belief, the unlawful infringing activities by Defendant Western Digital are continuing and will continue unless enjoined by this Court.

50. As a result of the infringing acts herein described, Convolve has sustained damages and will continue to sustain damages in the future, including irreparable harm, unless Defendant Western Digital is enjoined from infringing said patent.

**COUNT 5**  
**INFRINGEMENT OF U.S. PATENT NO. 6,314,473**  
**BY DEFENDANT HITACHI**

51. Convolve hereby restates, realleges, and incorporates by reference those allegations set forth in the foregoing paragraphs.

52. Upon information and belief, Defendant Hitachi has made, used, sold, offered for sale, and/or distributed in the United States hard disk drives that infringe one or more claims of the '473 Patent. Such hard disk drives include, but are not limited to, the models known as Hitachi L020, Hitachi L030, and all other similarly designed, manufactured and/or performing models of Hitachi hard disk drives.

53. Upon information and belief, Defendant Hitachi is in possession of certain hard disk drive firmware source codes and engineering software utilities and documentation, not within the public domain, which will provide additional evidence of said infringement.

54. Defendant Hitachi's actions constitute infringement pursuant to 35 U.S.C. § 271.

55. Upon information and belief, the unlawful infringing activities by Defendant Hitachi are continuing and will continue unless enjoined by this Court.

56. As a result of the infringing acts herein described, Convolve has sustained damages and will continue to sustain damages in the future, including irreparable harm, unless Defendant Hitachi is enjoined from infringing said patent.

**Prayer For Relief**

WHEREFORE, Plaintiff prays for entry of judgment against Defendants and for an award of relief and damages as follows:

- a. That Defendants have infringed the '635 and/or '473 Patents;
- b. That Defendants be ordered to pay damages adequate to compensate Plaintiff for Defendants' infringement of the '635 and/or '473 Patents pursuant to 35 U.S.C. § 284;
- c. That Defendant Dell be ordered to pay treble damages pursuant to 35 U.S.C. § 284;
- d. That Defendants be ordered to pay interest pursuant to 35 U.S.C. § 284;
- e. That Defendants be ordered to pay all costs associated with this action pursuant to 35 U.S.C. § 284;
- f. That Defendants be ordered to pay Plaintiff's attorneys' fees pursuant to 35 U.S.C. § 285;
- g. That Defendants be enjoined from further infringement of the '635 and/or '473 Patents; and
- h. That Convolve be awarded such other and further relief as the Court may deem just and equitable.

**Jury Demand**

Convolve hereby demands a trial by jury on all issues triable by a jury.

Respectfully submitted,



---

Eric M. Albritton  
Texas State Bar No. 00790215  
ALBRITTON LAW FIRM  
P.O. Box 2649  
Longview, TX 75606  
(903) 757-8449  
(903) 758-7397 (fax)  
ema@emafirm.com

T. John Ward, Jr.  
Texas State Bar No. 00794818  
WARD & SMITH LAW FIRM  
111 W. Tyler Street  
Longview, Texas 75601  
(903) 757-6400  
(903) 757-2323 (fax)  
jw@jwfirm.com

**ROBINS, KAPLAN, MILLER & CIRESI L.L.P.**

A. James Anderson (to be admitted *pro hac vice*)  
Georgia Bar No. 016300  
Stephen R. Risley (to be admitted *pro hac vice*)  
Georgia Bar No. 606545  
Marla R. Butler (to be admitted *pro hac vice*)  
Georgia Bar No. 099917  
2600 One Atlanta Plaza  
950 East Paces Ferry Road, N.E.  
Atlanta, GA 30326-1119  
Telephone: 404-760-4300  
Facsimile: 404-233-1267  
Email: ajanderson@rkmc.com  
Email: srrisley@rkmc.com  
Email: mrbutler@rkmc.com

**ATTORNEYS FOR PLAINTIFF CONVOLVE,  
INC.**